PERCEPTUAL RECOGNITION AS A FUNCTION OF CONFLICT AND DEFENSE

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CHAPTER I

INTRODUCTION

There are several studies of perceptual behavior which imply that the emotional meaning attached to a stimulus may have a significant effect on its recognition threshold. The concept, perceptual defense, has been offered as an adaptive process to designate the heightened threshold for anxiety evoking stimuli when compared with other stimuli. McGinnies (9), testing a group of subjects with a tachistoscopic presentation of taboo and neutral words, found that there was a greater galvanic skin response (GSR) to the taboo words than to the neutral words, as well as a higher recognition threshold for taboo as compared with neutral words. He termed the mechanism which accounted for these threshold and GSR differences, perceptual defense, assuming that there were perceptual as well as autonomic reactions to threatening stimuli which served to protect the observer from the awareness of unpleasant emotional objects. Lazarus (7) and Eriksen (2) have also supported the arguments for perceptual defense, the former maintaining that the mechanism is a "manifestation of the general idea of a defense process which should produce observable effects in any cognitive situation where the individual's security and self-esteem are threatened and where there is offered some opportunity for him to reduce the affective disturbance attendant on such a threat or gratify the motivation of seeing himself in a particular light" (7, p. 396).

The concept, sensitization, has been described as an adjustive response to emotionally toned stimuli in which the recognition threshold for threatening stimuli is lower than neutral stimuli similarly presented. Bruner and Postman (1) tested the hypothesis that stimulus words which are differentiated on the basis of associative reaction time are analogously differentiable in terms of speed of recognition. Nineteen subjects were presented words tachistoscopically which had been divided into fast, slow, and medium lists in terms of each subject's associative reaction time. In their study perceptual sensitization referred to the phenomenon in which subjects recognized words to which they had given extremely long reaction times at exposures considerably below threshold. The subjects, in the authors' words, sensitized "in the presence of 'dangerous' stimulus objects."

An attempt has been made to explain the results obtained in perceptual defense studies on the basis of the relative frequency of the stimulus words used, and on the reluctance of subjects to repeat aloud stimulus words that may be considered socially taboo (4 and 5). The present study has taken these criticisms into consideration.

Conflicting results have been obtained in two experiments attempting to demonstrate that delayed auditory perception of emotionally toned material was characteristic of some subjects, while relatively heightened perceptual recognition was characteristic of others.

Relatively slow auditory perception of emotionally toned material was predicted of patients who were designated as *repressors* on the basis of diagnosed conversion-dissociative reactions. Relatively fast auditory recognition was predicted of other patients who were designated *sensitizers* on the basis of diagnosed obsessive-compulsive reactions. Lazarus, Eriksen, and Fonda (8) obtained positive results in testing this hypothesis while Kurland (6) using a similar technique of subject selection, found no significant difference in the auditory recognition thresholds of the two subject groups. Kurland stated in his concluding comments that ". . . further study is necessary before one can accept with confidence the assertion that an S will respond to anxiety in a perceptual situation with the same type of defense he employs in a nonperceptual situation." The question of the generality or specificity of the type of mechanism used to cope with anxiety or stress as measured in perceptual studies still remains.

The present study attempted to approach the problem of the relationship between defense mechanisms employed in perceptual situations by using another technique. The study further attempted to relate two areas of intrapersonal conflict as well as two techniques for handling threats aroused in these conflict areas with perceptual recognition behavior. If the assertion that defense mechanisms operate in both cognitive and perceptual modes is true, then it may be hypothesized that the perceptual behavior of patients who use intellectualization and similar alerting defenses will differ from the perceptual behavior of patients who use repression and similar avoiding defenses. In addition, the perceptual behavior of patients whose major conflicts are in one area should differ from patients whose major conflicts are in another, depending on the relation of the stimulus to the area of conflict.

From these considerations the following two hypotheses were formulated:

1. The perceptual threshold of a word will vary in connection with its pertinence to a conflict area of the perceiver, i. e., words judged to be emotionally significant to subjects according to their conflict area will be recognized at a different threshold than words judged to be neutral.

2. The perceptual threshold of a word will vary with the perceiver's characteristic way of dealing with his emotional conflict, i. e., the repressors in each conflict group will recognize judged emotional words later than will sensitizers when a comparison between emotional and neutral words is made within each group.

CHAPTER II

METHOD

Subject Selection

The subjects for this study were selected from volunteer male patients in treatment at the Veterans Administration Mental Hygiene Clinic, Miami, Florida.

Four judges, three staff members and the writer independently evaluated the dossier on each prospective subject. The three staff members included two clinical psychologists and a psychiatrist. The following sources of information were utilized in making a judgment of the principal conflict area and principal technique for dealing with stressful stimuli related to the conflict area:

1. the social intake interview (case history),
2. psychiatric evaluation based on interview of the patient,
3. psychological test evaluation,
4. current interview notes by the therapist with whom the patient was working.

Each judge was given a typewritten sheet containing the following instructions:

> I am doing an experiment for which I want you to select (1) some people whose principal emotional problem is in dealing with aggressive impulses, and (2) some people whose principal emotional problem is in dealing with dependency needs. In each

> of these groups you are to select (A) those who usually deal with their problem by intellectualizing, discussing material related to or who are especially alert to such material; and (B) those who usually avoid topics in their problem area and who avert their attention from objects related to it.
>
> Four groups will be the product of your choices: (1) (A), (1) (B), (2) (A), (2) (B).

The four groups of subjects selected by this procedure, Aggressive Sensitizers, Aggressive Repressors, Dependent Sensitizers, and Dependent Repressors will hereafter be referred to as AS, AR, DS, and DR. The criterion for the selection of a subject was agreement by at least three-fourths of the judges on the subject's placement in one of the four groups. In order to insure independence of judgments the writer made his judgment initially after which he distributed the material to be judged among the other judges. Forty subjects made up the experimental population, ten subjects being allotted to each of the four groups.

Stimuli Selection

A total pool of 190 words selected from word lists and word association stimuli was drawn up. The words of this master list were chosen either because of their presumed close relation to the two conflict areas or because they appeared neutral in relation to the conflict areas. An effort was made to choose words which were part of socially-approved, everyday speech so that the effects of inhibition of response as a function of the word's taboo quality was lessened. This list was submitted individually to four clinical psychologists with the following directions:

> We all know that no single word is responded to in a similar fashion for any individual in all situations. However, from your experiences in evaluating and treating various patients, you may have observed that certain classes of words when presented to patients stimulate emotional responses relative to the patients predominant conflicts or problem area.
>
> On the sheets following, you are asked to rate each of the listed words according to its pertinence to *two* neurotic problem areas: (1) conflicts over expression of hostile impulses and (2) conflicts over expression of dependency needs.
>
> The ratings will be made by assigning a number to each word. The numbers *1*, *2*, *3*, and *4*, one of which is to be assigned each word, stand for the following relationships:
>
> 1. word is related to expression of hostile impulses,
> 2. word is related to expression of dependency needs,
> 3. word is unrelated to either of the above problem areas,
> 4. undecided as to which of the above three categories it applies.
>
> Several raters are being asked to rate these words independently. The words ultimately chosen will be presented tachistoscopically to patients in order to test a set of hypotheses concerning the operation of the perceptual defense phenomena.

Those words assigned the number *1* were placed in the *aggression* list, those assigned the number *2* in the *dependency* list, and those assigned the number *3*, in the *neutral* list.

Only those words were chosen on which there was general agreement by the judges. For the aggression and dependency lists all four judges agreed unanimously in their judgments of the 20 words chosen for each list. For the neutral word list, unanimous agreement was obtained for 12 words, while three-fourths agreement was obtained for the remaining eight words.

The final presentation list of 60 words was typed in small case letters on an electric typewriter after which the words were photographed. A positive was made of each photograph so that the black-on-white word pattern could be maintained. The individual film prints were then cut to size and centered between glass covers in permanent metal slides, two inches by two inches. The final presentation order of the 60 individual words was then determined from a table of random numbers and the number of each printed on the cover plate.

Apparatus

The tachistoscope used to present the word slides consisted of a projector and shutter. The projector was an S.V.E. Schoolmaster, Model SM-1, using 115 volts and 315 watts with a lamp of 300 wattage, maximum. The shutter was an S.V.E. Speed-i-o-scope with variable adjuster allowing continuous exposures between 1/100 second to one second. A shutter opening of f16 was used for all presentations. The stimuli were projected against a white screen 20 inches by 12 inches at a distance of 12 feet from the subject. The screen was a "Permanent Pigment" canvas board, regular white in color. The base of the screen was three feet, two inches from the floor. The experimenter, operating the tachistoscope, sat six feet from the subject while the tachistoscope itself was ten and one-half feet from the screen. The screen was fixed against a frame so that it was directly perpendicular to the subject's line of vision while being at a slight angle with the projector. The word image was then slightly elongated but at the distance projected the sharpness of the image was not affected.

The experimental room was roughly trapezoidal in shape and had one window which was blacked out for the length of the study. (See Figure 1 for schematic drawing of the experimental room.) The room was lighted entirely by eight 40 watt fluorescent tubes 54 inches long at ceiling level.

[redacted]

After the subject was selected by the judges he was contacted individually by the experimenter and asked if he would serve in a reading study involving the identification of words flashed on a screen. An appointment time was set, following his agreement to serve.

On the scheduled day each subject was seated and given these instructions:

> You will be shown a series of words one at a time which I would like you to identify. Each word will be shown twice before a new one is given. You may not be able to see the words clearly at first, but if you can you are encouraged to guess at what the word might be or could be. I will tell you when you have guessed correctly about a word. After I say "Ready," about one second will pass before the word will appear on the screen. Here are some practice words for you to try.

The words "boy" and "see" were then presented so that the subject had an opportunity to become accustomed to the testing room and the task required of him. Before the test list was presented,

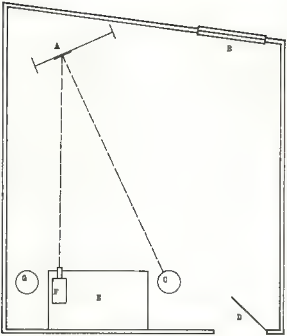

Fig. 1—Schematic drawing of experimental room

A. Reflector screen
B. Window
C. Subject
D. Door
E. Table
F. Projector
G. Experimenter

the subjects were encouraged to ask any question they might have about the task.

Each word was shown twice in succession to allow the subject to vary his fixation point slightly when adjusting to the second presentation. The sixty words were then presented at an exposure time of 1/100 second with an interval of ten seconds between different words. All words correctly identified at this exposure were dropped from the list and given a rank score on the basis of the order in which the words were correctly identified. The remainder of the words were then presented at an increased exposure time, 1/92 second. All words correctly identified at this level were dropped from the list and given a rank score. The procedure was continued until all words were given a rank score. The lowest possible rank score was 1 and the highest, 60. If a subject correctly identified one word at the initial presentation of the complete list, that word was given a rank of 1. If two words were correctly identified at the initial presentation, then each was given a rank of 1.5, etc. The decreasing presentation speeds in seconds were: 1/100, 1/92, 1/84, 1/71, 1/60, 1/55, 1/50, 1/42, 1/30, 1/25, 1/20, 1/13, 1/10, 1/8, 1/6, 1/5, 1/3, and 1/2.

Each subject spent between one and two hours at the task, the total time depending on the speed with which his threshold for all words could be reached. All responses to the stimuli were recorded.

CHAPTER III

[redacted]

The statistical methods used to analyze the data included a distribution-free test of analysis of variance hypotheses described by Wilson (11). This technique allowed "a chi square statistic for a contingency table to be decomposed into components in much the same manner as a total sum-of-squares is decomposed in analysis of variance computations." The use of ranks as the means of comparing the relationship of one word with another made this the statistic of choice. Siegel (10) states that the "properties of an ordinal scale (such as used here) are not isomorphic to the numerical system known as arithmetic. When only the rank order of scores is known, means and standard deviations found on the scores themselves are in error to the extent that successive intervals (distances between classes) on the scale are not equal. When parametric techniques of statistical inference are used with such data, any decisions about hypotheses are doubtful" (10, p. 26). For the present study the components included the variables of problem area (Dependency and Aggression), techniques for handling stimuli related to the problem area (Repression and Sensitization), and categories of stimulus words (Dependency, Aggression, and Neutral). These variables were analyzed through the use of the above statistic for overall effects, main effects of each variable, and interaction effects.

Secondly, the Wilcoxon Matched-Pairs Signed-Ranks test was used to evaluate the significance of differences in mean ranks of dependent, aggressive, and neutral words within each of the four subject groups: AS, AR, DS, and DR. This test takes into account the direction and magnitude of the differences considered while not demanding, as would a parametric test, that the measure be on at least an interval scale. According to Siegel, it has a power-efficiency of 95 per cent.

Table 1 presents a contingency table of all ranked scores (below the median value) on all words classed according to subject groups. This table is the basis for the evaluations summarized in Tables 2 and 3.

TABLE 1

CONTINGENCY TABLE OF FREQUENCIES OF RANK SCORES BELOW THE MEDIAN RANK VALUE OF ALL WORDS FOR ALL SUBJECT GROUPS

Subject Groups	Word Classes			Total
	D	A	N	
AS	109	96	94	299
DS	101	103	90	294
AR	88	93	85	266
DR	116	108	129	353
Total	414	400	398	1212

Table 2 summarizes the results of the three variable chi square analysis of the ranked word scores. The X^2_T, total chi square, is significant at the .001 confidence level and indicates that a significant overall effect was operating. The main effects of blocks, X^2_B, (the types of words) and the main effects of rows, X^2_R (technique for handling material related to the problem area) did not reach significance. X^2_C, column chi square, is significant at the .001 confidence level and indicates that the subject's recognition behavior differed as a function of the problem area; that is, subjects with judged dependency problems differed in their identification of words from subjects with judged aggression problems. X^2_I, total interaction, is significant at the .01 confidence level, and indicates an unspecified but significant overall interaction. The significant column by row interaction chi square, CRX^2_I (.001 level), in the absence of other significant interactions, implies that the significant total interaction effect is contributed to in large part by the interaction of the column effects (problem area) and the row effects (defense techniques).

Table 3, the RC chi square is an analysis of the row by column effects and was calculated in order to determine the interaction between problem areas and techniques for handling stimuli related to the problem areas. This table presents an exact count of all the ranked words above the overall median for all subjects. Each of the observed cell counts was compared with an expected frequency of 303. A chi square value of 13.09 was obtained, which for a df of 1 is significant at the .001 confidence level. It is apparent from the cell frequencies that sensitizers and repressors did not differ overall in the number of words they identified above the median; however, the repressors differed from each other in identifying words according to their problem area. In other words, subjects with dependency problems differed from those with aggression problems in the number of words they correctly identified, but only because some of each group were repressors. Specifically, the DRs saw more words below the median rank while ARs saw fewer words below the median rank.

Table 4 presents the mean ranks on each class of judged stimulus words for the four groups: AS, AR, DS, and DR.

Tables 5, 6, 7, and 8 present evaluations of mean rank differences within each of the AS, AR, DS, and DR groups respectively, as described in Siegel (10, pp. 75-83). For these evaluations each subject serves as his own control.

The last four tables considered as a whole bear up the impression gained in Table 2 of the unrelatedness of the judged quality of the words to the recognition thresholds of the subject groups. Of the 16 comparisons made on the four tables only three reached significance. Only one of these three differences was in a direction that might have been predicted: the D:N comparison on Table 7. On the basis of the number of comparisons made this difference might be expected by chance.

TABLE 2

SUMMARY TABLE OF CHI SQUARE VALUES
OBTAINED BY WILSON TECHNIQUE

X^2T = 36.10 df 11, $P < .001$

X^2R = 1.12 df 1, ————→ $.20 < P < .30$

X^2C = 11.19 df 1, $P < .001$

X^2D = .76 df 2, ———— $.50 < P < .90$

X^2I = 23.03 df 7, $P < .01$

RCX^2I = 1.23 df 2, ———— $.50 < P < .90$

RDX^2I = 3.58 df 2, ———— $.10 < P < .20$

CDX^2I = 14.11 df 1, $P < .001$

$RCDX^2I$ = 4.11 df 2, ———— $.10 < P < .20$

TABLE 3

CHI SQUARE EVALUATION OF PROBLEM AREAS
[redacted]

Defensive Techniques	Problem Areas		
	Dependency	Aggression	
Sensitization	294	299	593
Repression	353	266	619
	647	565	1212

$X^2 = 13.09$, df 1, $P < .001$

TABLE 4

MEAN RANKS FOR EACH GROUP ON EACH
CLASS OF WORDS

Subject Groups	Word Classes		
	D	A	E
AS	28.29	31.08	32.37
AR	30.97	29.94	31.07
BS	30.00	29.13	32.29
BR	30.06	31.83	29.70

TABLE 5

WILCOXON MATCHED-PAIR SIGNED-RANK DIFFERENCES BETWEEN MEAN WORD RANKS FOR THE AS GROUP

Word Group Comparisons	T	P
A: $\frac{D + N}{2}$	23	———
A: D	25	———
D: N	1	*.01
A: N	20	———

*Two-tailed test

TABLE 6

WILCOXON MATCHED-PAIR SIGNED-RANK DIFFERENCES BETWEEN [redacted]

Word Group Comparisons	T	P
A: $\frac{D + N}{2}$	15	———
A: D	24	———
A: N	16	———
D: N	26	———

TABLE 7

WILCOXON MATCHED-PAIR SIGNED-RANK DIFFERENCES BETWEEN MEAN WORD RANKS FOR THE DS GROUP

Word Group Comparison	T	P
D: $\frac{A + E}{2}$	22	———
D: A	21	———
D: E	10	**.05
A: E	8	*.05

*one-tailed test
**two-tailed test

TABLE 8

WILCOXON MATCHED-PAIR SIGNED-RANK DIFFERENCES BETWEEN MEAN WORD RANKS FOR THE DR GROUP

Word Group Comparisons	T	P
D: $\frac{A + E}{2}$	24	———
D: A	23	———
D: E	27	———
A: E	17	———

CHAPTER IV

DISCUSSION AND SUMMARY

The first hypothesis formulated was that the perceptual threshold of a word will vary in connection with its pertinence to a conflict area of the perceiver. It was predicted from this hypothesis that words judged to be emotionally significant to the subjects according to their conflict area would be recognized at a different threshold than words judged to be neutral. The results obtained indicated that the words as arranged in conflict and neutral lists were not recognized differentially, nor therefore responded to in terms of their judged qualities.

The second hypothesis stated that the perceptual threshold of a word will vary with the perceiver's characteristic way of handling his emotional conflict. It was predicted from this hypothesis that the repressors in each conflict group would recognize judged emotional words later (at a higher threshold) than would the sensitizers when a comparison between emotional and neutral words was made within each group. Since the words were not reacted to differentially in terms of their conflict and neutral qualities the second hypothesis was not confirmed.

The results indicated a significant over-all effect as demonstrated by the X^2r value. More specifically, it is apparent from Table 2 that there was a significant difference in the number of words correctly identified below the median value between subjects with dependency problems and those with aggression problems. Examining this difference more carefully, Table 3 demonstrated that subjects with dependency problems differed from those with aggression problems in the number of words correctly identified above the median rank value, chiefly because some of each group were repressors. That is, the DR group saw more words, regardless of category, below the median while the AR group saw fewer words, regardless of category, below the median value.

Bruner and Postman (1) propose a paradigm which may fit the results just discussed. In explaining the curvilinear relationship between their subjects' associative reaction times and their recognition thresholds, they state:

> There is for some subjects, then, a critical degree of emotionality beyond which perceptual defense does not operate. Once this critical degree of emotionality has been exceeded, the "dangerous" stimulus is met with utmost alertness and speed . . . so long as the situation is not *too* threatening or *too* exacting, avoidance of meaning may be *the* most economical response. But in situations which are highly threatening and highly exciting, the most adaptive perceptual response is frequently the one which takes the most vigilant account of reality.

In this view then repression is followed by sensitization as an increasing function of emotionality. The findings of Kurland (6) and Gilchrist, Ludeman, and Lysak (3) indicated that negatively valued words had lower recognition thresholds than did neutral words.

In both studies it was expected that the threat stimuli would raise the recognition thresholds.

In the present study the relative threshold for the stimulus words was low for the DR group and high for the AR group. If it may be assumed that the testing situation involved in Lazarus' terms "a cognitive situation where the individual's security and self-esteem are threatened," then a general nonspecific defensive process may be operating to retard the perceptions of the AR group. The results for the DR group are in the opposite direction in that they generally responded more quickly (at a lower threshold) to the word stimuli. It must be assumed, in addition that the AR and DR groups perceived the testing situation as emotionally threatening and therefore responded in an overall fashion to all the word stimuli; specifically the DR group felt more threatened by the testing situation using the sensitization response, while the AR group felt less threatened and were able to use the higher order repressive responses. Since the assumptions underlying an increasing amount of emotionality were not tested in the present study, the fitting of the data to the theory is ad hoc.

From the overall results, it would appear that Kurland's question (stated earlier) concerning the relation of anxiety-provoking stimuli in perceptual and nonperceptual situations is answered in this study in the negative. That is, individual differences in perceptual response seem to have overridden any influence of the judged conflictful or neutral quality of the word lists.

In summary, 40 subjects were placed into four categories on the basis of four independent judgments of their clinical behavior. Categorization of the subjects included evaluations of their areas of intrapersonal conflict and their techniques for handling stimuli impinging on these areas. The conflict areas selected for judgment were (1) expression of aggressive impulses and (2) expression of dependency needs. The techniques for dealing with conflict stimuli were (1) repression or avoidance and (2) sensitization or unusual alertness. The four groups judged, Dependent Sensitizers, Dependent Repressors, Aggressive Sensitizers, and Aggressive Repressors, were presented 60 words tachistoscopically. Each word had been selected from a master list and placed independently by four judges into one of three groups: (1) related to dependency needs, (2) related to aggressive or hostile impulses, (3) unrelated to either of the above, and therefore neutral. For each subject each word was assigned a rank based on the order in which it was correctly identified within the list of 60 words.

The variables of class of word, conflict area, and defensive technique were treated in a nonparametric test of analysis of variance hypotheses and it was found that two hypotheses which had predicted a relationship between clinical behavior and differential perceptual recognition of emotionally related and neutral words in terms of visual thresholds were not confirmed. The results indicated the repressors in each conflict group, responded differentially to all of the words rather than selectively to any one judged list, while for the other subjects there were no significant differences in their recognition of words.

Implications for the influence of individual differences as opposed to theoretically implied effects of the defensive process were drawn, as well as possibilities by which the results, if interpreted rather broadly, may fit an existing theory relating types of defensive behavior to increasing emotionality.

APPENDIXES

APPENDIX A: STIMULUS WORDS IN ORDER OF PRESENTATION

A — Aggressive
D — Dependent
N — Neutral

1. nurse — D
2. hill — N
3. wind — N
4. haven — D
5. window — N
6. yard — N
7. eat — D
8. whip — A
9. nipple — D
10. shot — A
11. far — N
12. suck — D
13. cut — A
14. taste — D
15. storm — A
16. jerk — A
17. rip — A
18. help — D
19. spear — A
20. home — D
21. city — N
22. flag — N
23. bag — N
24. usual — N
25. foot — N
26. dine — D
27. day — N
28. crush — A
29. grass — N
30. soon — N
31. rage — A
32. wall — N
33. soft — D
34. sweet — D
35. kind — D
36. rent — A
37. kill — A
38. fight — A
39. aid — D
40. death — A
41. plead — D
42. swallow — D
43. lamp — N
44. mangle — A
45. table — N
46. blood — A
47. alone — D
48. door — N
49. comfort — D
50. gash — A
51. breast — D
52. carpet — N
53. corpse — A
54. porch — N
55. follow — D
56. raid — A
57. fire — A
58. cabbage — N
59. high — N
60. punch — A

APPENDIX B: RANK SCORES

Rank Scores on All Words for All Subjects: AS Group

	Word Number														
Subject	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	29	18	18	18	46.5	29	29	46.5	46.5	18	7	7	18	46.5	46.5
2	53	44.5	19	44.5	58.5	44.5	[illegible]	44.5	44.5	19	53	19	19	19	44.5
3	14.5	14.5	50	42	30	14.5	30	60	14.5	30	42	14.5	2.5	14.5	42
4	21	45	45	45	21	21	[illegible]	59.5	45	45	45	23	45	45	45
5	52	2	42	42	18.5	18.5	18.5	18.5	58	18.5	58	42	18.5	18.5	42
6	54.5	58.5	40	18	48.5	40	40	48.5	40	18	48.5	18	18	54.5	48.5
7	6	31.5	53	18.5	53	18.5	6	53	53	53	41.5	41.5	6	18.5	41.5
8	34	18.5	49	58.5	55	49	[illegible]	18.5	34	49	6.5	18.5	6.5	6.5	34
9	41	16.5	41	57	41	16.5	10	41	41	10	23	41	10	41	42
10	23.5	23.5	23.5	59.5	56	23.5	23.5	23.5	56	48.5	23.5	23.5	23.5	23.5	23.5

	Word Number														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	46.5	46.5	7	46.5	2	7	46.5	46.5	18	46.5	18	29	46.5	46.5	18
2	19	19	19	19	19	19	44.5	19	19	19	19	19	44.5	58.5	19
3	14.5	5	30	50	30	30	42	42	56.5	30	14.5	14.5	30	30	30
4	45	45	8	29	8	45	45	21	8	29	45	21	45	45	8
5	18.5	18.5	42	18.5	18.5	52	18.5	42	58	18.5	42	18.5	42	42	42
6	18	18	18	54.5	18	18	18	18	18	18	18	18	18	48.5	18
7	18.5	31.5	31.5	53	18.5	18.5	53	6	6	41.5	18.5	18.5	41.5	53	18.5
8	18.5	49	18.5	18.5	18.5	49	55	6.5	58.5	6.5	6.5	6.5	34	34	18.5
9	10	10	[illegible]	41	41	23	41	3.5	60	41	41	3.5	41	57	41
10	23.5	23.5	23.5	48.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	48.5

Rank Scores on All Words for All Subjects: AS Group—Continued

	Word Number														
Subject	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	46.5	29	18	2	18	46.5	18	46.5	18	18	29	46.5	7	46.5	46.5
2	19	19	19	19	44.5	53	19	44.5	19	44.5	44.5	19	44.5	58.5	19
3	30	42	14.5	50	14.5	2.5	2.5	42	56.5	42	42	14.5	2.5	59	53.5
4	8	29	21	8	21	45	59.5	29	45	8	45	8	45	21	45
5	18.5	52	18.5	18.5	42	42	18.5	42	18.5	18.5	18.5	18.5	18.5	58	18.5
6	18	18	18	18	40	58.5	18	40	18	18	48.5	40	18	58.5	48.5
7	6	53	18.5	41.5	31.5	31.5	31.5	18.5	31.5	18.5	53	53	31.5	53	53
8	34	34	34	6.5	6.5	55	49	49	34	34	34	34	18.5	34	6.5
9	23	41	16.5	3.5	16.5	23	3.5	23	10	16.5	41	41	41	59	41
10	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	52	56	23.5	56	23.5

	[redacted]														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
1	18	29	7	18	46.5	46.5	46.5	46.5	46.5	46.5	46.5	46.5	46.5	2	7
2	19	19	19	19	55.5	58.5	19	19	19	19	44.5	19	55.5	19	19
3	14.5	14.5	14.5	30	56.5	30	14.5	50	56.5	53.5	42	14.5	50	14.5	42
4	45	8	8	8	45	45	45	21	21	8	45	8	45	29	8
5	2	42	2	42	59.5	42	59.5	18.5	42	18.5	58	18.5	42	18.5	18.5
6	18	40	18	18	40	54.5	48.5	18	18	18	18	18	58.5	18	18
7	31.5	31.5	6	18.5	31.5	6	41.5	31.5	18.5	6	53	6	53	41.5	6
8	6.5	49	49	49	34	18.5	34	34	18.5	18.5	34	34	34	60	49
9	10	41	3.5	23	41	41	41	41	41	41	16.5	3.5	57	41	23
10	23.5	52	23.5	23.5	23.5	23.5	56	23.5	48.5	23.5	23.5	23.5	59.5	52	23.5

Rank Scores on All Words for All Subjects: AE Group

	Word Number														
Subject#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
11	48.5	48.5	59	14.5	14.5	14.5	14.5	59	59	14.5	48.5	48.5	14.5	32.5	48.5
12	6	26.5	53.5	16.5	16.5	6	16.5	53.5	53.5	16.5	16.5	59.5	16.5	42	32.5
13	48.5	17.5	40.5	17.5	17.5	40.5	40.5	57	57	17.5	17.5	17.5	17.5	17.5	48.5
14	41	15	56.5	46.5	52	25.5	4.5	60	46.5	15	41	4.5	25.5	41	25.5
15	29	29	29	29	29	29	29	29	29	29	29	29	3	29	29
16	44	44	44	44	44	21.5	44	44	44	44	44	21.5	9	21.5	21.5
17	23	36	23	56.5	44.5	23	10	51.5	36	36	23	51.5	36	10	10
18	51	15.5	15.5	56.5	40	40	56.5	56.5	40	56.5	40	15.5	40	40	40
19	14.5	9.5	14.5	38	38	2	9.5	38	38	38	38	38	38	59	38
20	27.5	13.5	27.5	27.5	50	13.5	41.5	50	55.5	41.5	41.5	4	27.5	53.5	4

	Word Number														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
11	14.5	48.5	14.5	48.5	14.5	48.5	32.5	14.5	14.5	32.5	48.5	32.5	14.5	14.5	48.5
12	53.5	42	16.5	42	42	6	42	16.5	32.5	26.5	16.5	32.5	53.5	16.5	32.5
13	17.5	17.5	17.5	17.5	17.5	40.5	17.5	17.5	52.	17.5	17.5	17.5	40.5	40.5	17.5
14	15	15	4.5	41	41	41	41	41	56.5	41	56.5	4.5	46.5	4.5	4.5
15	29	29	3	29	29	55	29	29	29	29	29	3	55	29	29
16	9	21.5	9	44	9	44	44	21.5	44	21.5	21.5	9	44	44	21.5
17	51.5	2.5	36	36	36	51.5	23	51.5	51.5	10	23	10	23	58.5	44.5
18	15.5	15.5	15.5	40	40	40	15.5	15.5	40	15.5	56.5	40	40	40	40
19	14.5	38.	38	38	14.5	38	38	59	38	14.5	38	6	38	59	38
20	4	41.5	27.5	13.5	41.5	50	27.5	27.5	58	13.5	41.5	13.5	4	41.5	4

Rank Scores on All Words for All Subjects: AR Group—Continued

	Word Number														
Subject	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
11	14.5	32.5	32.5	14.5	32.5	32.5	14.5	14.5	32.5	48.5	32.5	14.5	14.5	48.5	14.5
12	42	16.5	42	42	42	53.5	26.5	32.5	1.5	42	26.5	53.5	6	53.5	42
13	40.5	40.5	17.5	52	57	48.5	17.5	17.5	17.5	17.5	17.5	57	48.5	57	52
14	15	46.5	41	46.5	52	41	25.5	15	46.5	41	15	56.5	56.5	46.5	56.5
15	29	3	29	29	29	29	29	29	3	29	58.5	55	29	60	55
16	44	44	44	9	21.5	44	9	44	44	9	9	60	21.5	44	21.5
17	23	10	10	23	23	44.5	10	10	2.5	23	36	60	44.5	44.5	2.5
18	40	40	15.5	40	15.5	56.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	56.5	51
19	38	14.5	14.5	38	38	38	6	6	38	38	38	38	38	38	38
20	13.5	27.5	13.5	23.5	27.5	41.5	27.5	27.5	41.5	41.5	13.5	59.5	13.5	59.5	50

	Word Number														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
11	32.5	32.5	48.5	1.5	1.5	48.5	48.5	14.5	14.5	48.5	48.5	48.5	48.5	32.5	14.5
12	6	1.5	16.5	53.5	59.5	26.5	16.5	6	26.5	42	16.5	6	53.5	42	32.5
13	17.5	17.5	17.5	40.5	17.5	17.5	40.5	17.5	17.5	17.5	57	40.5	57	40.5	17.5
14	4.5	25.5	15	25.5	46.5	15	15	25.5	52	41	4.5	15	15	15	25.5
15	29	29	29	29	55	29	29	29	29	29	29	29	58.5	29	29
16	9	44	21.5	44	21.5	2	44	44	2	2	44	44	44	44	9
17	51.5	44.5	2.5	10	36	58.5	23	51.5	36	23	23	10	56.5	36	23
18	15.5	40	15.5	15.5	15.5	15.5	15.5	15.5	56.5	15.5	15.5	15.5	51	15.5	15.5
19	6	38	2	38	38	38	38	38	38	6	2	38	38	14.5	38
20	27.5	13.5	13.5	27.5	27.5	41.5	13.5	27.5	50	27.5	41.5	4	57	55.5	4

Rank Scores on All Words for All Subjects: DS Group

Subject	Word Number 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
21	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	60	30.5	30.5	30.5	30.5	30.5	30.5
22	16	16	16	16	40	16	16	16	58	16	40	40	4	16	40
23	39	52.5	59.5	52.5	52.5	16	16	52.5	39	39	16	16	16	39	16
24	51	37	24.5	51	37	51	8.5	51	51	51	24.5	24.5	8.5	8.5	51
25	58	58	50.5	33.5	33.5	33.5	33.5	58	11.5	33.5	33.5	11.5	33.5	50.5	58
26	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	53	53	7	53	11.5
27	31.5	12.5	31.5	31.5	43	12.5	12.5	51.5	59.5	43	43	17.5	12.5	17.5	43
28	56	26	56	26	26	26	26	56	26	26	26	26	26	26	26
29	51	51	25.5	59.5	51	25.5	51	51	51	25.5	25.5	25.5	25.5	25.5	51
30	26.5	26.5	26.5	26.5	55	26.5	26.5	26.5	26.5	56.5	26.5	26.5	26.5	26.5	26.5

	Word Number 16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
21	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
22	40	40	16	16	16	6.5	40	6.5	40	16	16	1.5	40	40	40
23	16	39	16	16	52.5	39	16	39	52.5	16	16	16	16	16	16
24	37	24.5	8.5	51	37	8.5	51	37	51	37	37	8.5	24.5	51	8.5
25	11.5	11.5	11.5	11.5	33.5	33.5	50.5	50.5	33.5	50.5	33.5	11.5	33.5	50.5	33.5
26	7	7	30.5	53	30.5	53	53	53	59	30.5	30.5	30.5	11.5	30.5	11.5
27	12.5	12.5	12.5	12.5	43	12.5	51.5	12.5	31.5	12.5	43	12.5	31.5	51.5	12.5
28	26	26	26	26	26	26	56	26	26	26	26	26	26	26	26
29	25.5	51	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	51	51	51	25.5	51
30	26.5	26.5	26.5	53.5	26.5	26.5	53.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5

Rank Scores on All Words for All Subjects: DS Group—Continued

	Word Number														
Subject	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
21	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	1	30.5	30.5
22	16	40	40	16	58	40	40	40	4	40	40	40	40	40	40
23	16	39	39	16	39	16	16	16	16	16	16	52.5	16	52.5	59.5
24	8.5	24.5	24.5	24.5	37	51	37	8.5	8.5	8.5	51	51	24.5	51	8.5
25	58	33.5	11.5	11.5	11.5	33.5	33.5	11.5	33.5	33.5	33.5	11.5	11.5	33.5	50.5
26	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	11.5	30.5	30.5	30.5	53	30.5
27	12.5	51.5	12.5	43	31.5	51.5	12.5	12.5	12.5	12.5	51.5	31.5	31.5	57	31.5
28	26	56	26	56	26	56	26	26	26	26	26	26	26	56	26
29	25.5	25.6	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	59.5	51
30	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	59	26.5	59	56.5

	Word Number														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
21	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
22	40	4	1.5	40	40	40	58	40	40	16	40	40	58	40	58
23	52.5	39	16	52.5	16	39	16	39	52.5	39	39	16	52.5	16	16
24	24.5	24.5	8.5	8.5	8.5	51	24.5	24.5	51	51	24.5	8.5	24.5	51	24.5
25	11.5	50.5	11.5	33.5	50.5	11.5	11.5	11.5	50.5	11.5	11.5	33.5	11.5	33.5	11.5
26	2.5	7	2.5	7	53	30.5	53	60	30.5	2.5	30.5	30.5	53	30.5	2.5
27	12.5	51.5	12.5	59.5	51.5	31.5	43	31.5	57	12.5	31.5	31.5	57	31.5	43
28	26	26	26	26.	26	26	26	26	26	26.	26	26	26	56	26
29	25.5	25.5	25.5	25.5	25.5	4	4	4	51	25.5	4	4	4	51	4
30	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	59	26.5	26.5

Rank Scores on All Words for All Subjects: DR Group

	Word Number														
Subject	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
31	45	45	20	45	20	20	20	45	20	45	55.5	20	20	45	20
32	22.5	50	22.5	50	50	35	22.5	50	35	35	22.5	35	7.5	35	7.5
33	27	11	45	6.5	45	27	2.5	45	57	45	45	6.5	2.5	46	45
34	19.5	19.5	46	46	19.5	19.5	19.5	46	57.5	19.5	19.5	57.5	19.5	19.5	57.5
35	42.5	42.5	19	5	42.5	5	12.5	27	42.5	42.5	42.5	42.5	19	42.5	27
36	52	23.5	23.5	23.5	23.5	23.5	23.5	58.5	58.5	23.5	23.5	23.5	52	23.5	52
37	48	12	12	54.5	33.5	12	33.5	33.5	60	33.5	48	48	33.5	54.5	48
38	54.5	46.5	8.5	8.5	34	34	21.5	21.5	54.5	21.5	34	8.5	46.5	46.5	21.5
39	28	57.5	28	28	28	28	28	28	28	28	28	28	28	28	28
40	51	18	18	42	59	18	42	56	51	42	42	18	18	51	42

	Word Number														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	20	20	20	20	20	55.5	20	20	20	20	20	20	20	20	20
32	7.5	7.5	22.5	7.5	22.5	50	50	22.5	50	22.5	50	22.5	35	50	7.5
33	45	45	45	46	27	46	11	57	27	45	57	45	11	57	15.5
34	54.5	46	19.5	46	19.5	19.5	19.5	19.5	19.5	46	19.5	19.5	46	19.5	19.5
35	42.5	42.5	12.5	27	27	42.5	56.5	5	42.5	12.5	5	19	56.5	42.5	5
36	23.5	52	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
37	48	33.5	12	33.5	53.5	12	12	48	33.5	12	12	12	12	12	33.5
38	8.5	21.5	8.5	46.5	8.5	34	46.5	8.5	34	8.5	54.5	8.5	46.5	8.5	21.5
39	28	28	28	28	28	28	28	28	28	28	28	28	28	57.5	28
40	18	18	56	56	42	18	42	18	42	18	42	18	42	51	18

Rank Scores on All Words for All Subjects: DR Group--Continued

	Word Number														
Subject	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
31	1.5	45	1.5	55.5	55.5	45	45	45	20	20	20	20	20	59.5	45
32	7.5	7.5	7.5	7.5	35	50	7.5	22.5	22.5	35	50	7.5	7.5	50	50
33	27	6.5	2.5	15.5	27	2.5	45	45	57	45	6.5	27	27	11	27
34	46	19.5	19.5	19.5	19.5	54.5	46	46	19.5	46	46	19.5	19.5	60	19.5
35	42.5	12.5	42.5	12.5	5	42.5	27	42.5	5	42.5	42.5	42.5	27	56.6	42.5
36	23.5	52	52	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	52	52	60	23.5
37	33.5	48	33.5	33.5	12.	33.5	12	12	12	12	12	48	12	58.5	33.5
38	8.5	34	34	34	34	8.5	54.5	54.5	58.5	34	34	21.5	21.5	60	46.5
39	28	28	28	28	28	28	28	28	28	57.5	28	28	28	60	28
40	18	18	18	18	18	18	18	18	18	42	56	18	18	56	51

	Word Number														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
31	45	20	20	45	20	20	45	20	55.5	45	55.5	20	59.5	20	20
32	35	7.5	22.5	22.5	22.5	50	50	50	50	50	50	50	50	22.5	22.5
33	27	45	27	57	27	11	27	27	15.5	57	15.5	27	27	27	27
34	19.5	19.5	19.5	46	19.5	19.5	57.5	19.5	19.5	46	19.5	19.5	46	19.5	19.5
35	27	5	19	42.5	56.5	12.5	19	19	56.5	27	19	56.5	60	27	5
36	23.5	23.5	23.5	52	23.5	52	23.5	23.5	23.5	52	23.5	23.5	23.5	23.5	23.5
37	12	33.5	12	33.5	58.5	54.5	12	33.5	54.5	42	48	33.5	57	33.5	12
38	8.5	46.5	8.5	21.5	46.5	54.5	34	56.5	34	8.5	34	8.5	58.5	34	21.5
39	28	28	28	28	28	28	28	28	28	28	28	57.5	28	28	28
40	18	18	18	18	42	18	18	18	18	18	18	42	60	18	18

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BIOGRAPHICAL SKETCH

Richard H. Levin was born September 23, 1930, in Newark, New Jersey. He was graduated from Passaic High School, Passaic, New Jersey in 1948. Entering Rutgers University in the fall of 1948 he was graduated with a Bachelor of Science degree in the spring of 1952 with a major in psychology.

Entering the University of Florida in the fall of 1952 he received his Master of Arts degree in psychology in June, 1954. From February of 1956 until the present time he has been serving as a Clinical Psychology Trainee with the Veterans Administration.

He is an associate member of the American Psychological Association and Psi Chi.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Arts and Sciences and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 9, 1958

C. F. Byers
Dean, College of Arts and Sciences

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